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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/469,406	12/22/1999	ALI KESHAVARZI	042390.P7511	4937

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EXAMINER

KANG, DONGHEE

ART UNIT PAPER NUMBER

2811

DATE MAILED: 02/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/469,406

Applicant(s)

KESHAVARZI ET AL.

Examiner

Donghee Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Acknowledgment

1. Applicant's Amendment and Response to Paper No.9 has been entered and made of record. Claims 1-28 have been cancelled and new claims 29-50 are added. Thus claims 29-50 are pending in this Office Action.

Information Disclosure Statement

2. Acknowledgment is made of receipt of applicant's Information Disclosure Statement (PTO-1449) filed January 14, 2002.

Claim Objections

3. Claims 34 & 45 are objected to because of the following informalities:
The word "mover" should be changed to "more". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims **29, 32-35, 40-42, & 46-50** are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (Fig.1 & Fig.9).

Regarding claims **29 & 32**, APA discloses a die, comprising (Fig.9):

a first conductor (Vg) carrying a power supply voltage; a second conductor (Vs) carrying a ground voltage; and a semiconductor capacitor, including:

a gate electrode coupled to the first conductor to receive the power supply voltage; a diffusion coupled to the second conductor to receive the ground voltage, wherein the diffusion is a first diffusion and the semiconductor capacitor further includes a second diffusion (Vd) coupled to the second conductor to receive the ground voltage; a body to receive the ground voltage through the first and second diffusion. See also page 5, line 16 – page 6, line 2 & page 9, line 7-16.

APA does not explicitly disclose the semiconductor capacitor operating in depletion mode to provide decoupling capacitance between the first and second conductors.

However, this limitation “depletion mode” is an operating function of device rather than a structure of device. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device is, not what a device does.” (emphasis in original) *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

The APA (Fig.9)’s device has an identical structure as the claimed structure. Therefore, the claimed structure is taken to be in the least obvious over APA (Fig.9).

Regarding claims **33-34**, APA (Fig.9) discloses the first and second diffusions are source/drain diffusions, wherein the first and second diffusion are more heavily doped than the body.

Regarding claim **35**, APA (Fig.9) discloses the semiconductor capacitor having a flatband voltage but does not teach the power supply voltage has a smaller absolute value than does the flatband voltage. However, it is well known and conventional to have the power voltage which has a smaller absolute value than does the flatband voltage to obtain depletion mode (See also Fig.3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply this power voltage since it is required to have small voltage than flatband voltage to obtain depletion mode.

Regarding claims **40-42**, APA discloses a die, comprising (Fig.9):

a first conductor (V_g) carrying a power supply voltage; a second conductor (V_s) carrying a ground voltage; and a semiconductor capacitor, including:

a substrate; a gate electrode coupled to the first conductor to receive the power supply voltage; an insulation between the substrate and the body; a diffusion coupled to the second conductor to receive the ground voltage, wherein the diffusion is a first diffusion and the semiconductor capacitor further includes a second diffusion (V_d) coupled to the second conductor to receive the ground voltage; a body to receive the ground voltage through the first and second diffusion. APA does not explicitly disclose the semiconductor capacitor operating in depletion mode to provide decoupling capacitance between the first and second conductors.

This would be obvious for the same reasons as given for the rejection of claim 29 (see above).

Regarding claims **46 & 50**, APA (Fig.9) discloses the semiconductor capacitor having a flatband voltage but does not teach the power supply voltage has a smaller absolute value than does the flatband voltage. This would be obvious for the same reasons as given for the rejection of claim 35 (see above).

Regarding claims **47-48**, APA (Fig.9) teaches the gate electrode and the source/drain are n-type and the diffusion and the body are p-type, wherein the source/drain are coupled to the conductor to receive the ground voltage.

Regarding claim **49**, APA (Fig.9) discloses the source/drain diffusions are more heavily doped than the body.

6. Claims **30-31, 36-39, & 43-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over APA (Fig.9) in view of APA (Fig.1).

Regarding claims **30-31**, APA (Fig.9) teaches the diffusion (source/drain) is n-type, with the diffusion being more heavily doped than the body but does not teach gate electrode is p-type and the body is n-type.

However, APA (Fig.1) teaches p-type gate electrode and n-type body. It would have been an obvious matter of design choice to form claimed structure, since such a modification would have involved a mere change in the polarity type of a component.

Regarding claims **36-38**, APA (Fig.9) teaches the diffusion is p-type but does not teach the gate electrode and source/drain diffusions are p-type and the body are n-

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type. However, APA (Fig.1) teaches the gate electrode and source/drain diffusions are p-type and the body are n-type.

Regarding claim 39, APA (Fig.9) discloses the semiconductor capacitor having a flatband voltage but does not teach the power supply voltage has a smaller absolute value than does the flatband voltage. This would be obvious for the same reasons as given for the rejection of claim 35 (see above).

Regarding claims 43-45, APA (Fig.9) does not teach the first and second diffusions are source/drain diffusions, which are more heavily doped than the body but does not teach the first and second diffusions coupled to the conductor to receive the power supply voltage and the body receives the power supply voltage through the first and second diffusions. However, APA (Fig.1) teaches the first and second diffusions coupled to the conductor to receive the power supply voltage and the body receives the power supply voltage through the first and second diffusions. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching the APA (Fig.1) into APA (Fig.9) in order to obtain a depletion mode. Further this limitation is operating of device rather than product of semiconductor device as discussed above.

Response to Arguments

7. Applicant's arguments filed January 14, 2002 have been fully considered but they are not persuasive.

Applicant argues that prior art (Fig.1 & 9) are in inversion mode and there is no teaching or suggestion in the prior art portion of the present invention to put them in

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depletion mode. These matters have been pointed out in the statement of rejection in the paragraph above with respect to claims 29 & 40. This limitation "depletion mode" is operating function of the device rather than structure of semiconductor device.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." (emphasis in original) *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Therefore, claimed structure is taken to be in the least obvious over APA (Fig.9).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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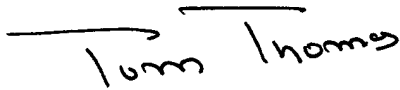
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 703-305-9147. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Donghee Kang, Ph.D.
February 16, 2002


TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800